Amendments to the Drawings:

The attached sheet of drawings includes changes to Figure 12. This sheet, which includes Fig. 12, replaces the original sheet including Fig. 12.

REMARKS

Applicants have amended each of the independent claims in response to the office action and requests reconsideration of the claims as now presented. Applicants have canceled claims 5-8 with this response and placed many of the limitations of these claims in the independent claims. In addition, applicants have added new claims 20 and 21 and request consideration of these claims.

Objection to the Drawings:

Figure 12 has been amended to reflect that it is prior art and a new drawing sheet is presented herewith for approval.

The examiner has objected to the drawings under 37 C.F.R. § 1.83(a). Particularly, the examiner stated: "steps of 'setting recording powers of top pulse and recording information' must be shown [as steps] or the features canceled from the claims."

First, applicants have amended Claim 1 to remove any reference to particular steps. This should be sufficient to overcome the objection.

In addition, Applicants respectfully traverse the objection. Figures 4, 5, 6 and 7 each show a method of recording data including "setting recording powers of top pulse and recording information." For example, Figure 6 clearly shows setting the recording power of a top pulse and a last pulse to a recording power Pw2 and setting the recording power of an intermediate pulse to a first recording power Pw1 and recording data corresponding to a period of 4T. Thus, the feature as claimed and as now claimed is shown in the Figures.

Accordingly, all claimed matter is clearly shown in the figures. Applicants respectfully request withdrawal of the objection in light of these remarks and the amendment.

Claims

Rejections under 35 U.S.C. § 102(e)

Examiner rejected claims 1, 3, 5, 7, 12, 14, 16, and 18 as being anticipated by Miyamoto et al., U.S. Patent No. 6,236,635.

Claim 1 has been amended and contains new features. The amended claim 1 is believed clearly patentable over the prior art.

Claim 1 contains two specific features in a combination that is not found in or obvious in light of the prior art.

First, claim 1 specifies that the recording power of the top pulse and/or the last pulse has a recording power that is lower than an intermediate recording pulse. This means that one or more pulses between the first and last pulses have a higher power than either the first or the last pulse. Examples of this are shown in Figures 6 and 7.

Second claim 1 further specifies that for such a recording pulse train, the width of a cooling pulse of the laser beam used for forming at least one recording mark contained within the group is set to wider than each of the top pulse, any intermediate and the last pulse.

This is a particular combination of having a claimed selected relationship between both the recording powers of the top and/or last recording pulse and the intermediate pulses and width of the cooling pulse. This is not shown in, nor obvious from any prior art. The examiner states that Miyamoto discloses this in col. 9 lines 12-28 and figs 6-7. Applicants strongly disagree.

This location of the text of Miyamoto does not discuss the width of the cooling pulse at all. In addition, applicants have studied Fig. 6 and 7 and these clearly show a cooling pulse of the same width as both the first pulse and the last pulse. Therefore, there is no teaching in the text or any Figures of a pulse train having the two combined features as now claimed in Claim 1.

Fig. 6 of Miyamoto shows several pulse trains wherein the width of the cooling pulse Tc is clearly shown to be 1 period of the clock cycle (1T); at no time is it wider than other pulses. For example, tor the 3T recording mark, the top recording pulse is clearly shown to be 1.5T which is wider than the cooling pulse of 1T. For the 4T, 6T, and 11T marks, the first and last recording pulses are clearly shown to be 1T in width, the same as the cooling pulse. Thus Fig. 6 does not show or imply that the cooling pulse is wider than each pulse of the recording power.

Similarly Fig. 7 of Miyamoto discloses the same relationships between the cooling pulse and the recording pulses, namely that the width of the cooling pulse is less than or equal to the width of the first and the last recording pulse. Thus Fig. 7 of Miyamoto does not

show or imply that the width of the cooling pulse is wider than each pulse of the recording power.

Likewise, the text of Miyamoto indicated by the examiner (col. 9, lines 12-28) does not teach or imply that the width of the cooling pulse is wider than each pulse of the recording power. In fact, the cooling pulse is not mentioned in this portion of the text.

Additionally, at no place in the specification or the figures does Miyamoto teach or imply that the width of the cooling pulse is wider than the width of each pulse of the recording power together with the other features of claim 1. Applicants note that in Col. 9, lines 57-67 and Col.10, lines 1-5 and Figures 9A-9B there is a discussion of the width of the cooling pulse in relation to a timing between the next subsequent recording mark; however, none of these examples show the width of all the related recording pulses and also, none of these examples specify the particular combination of the top pulse and/or last pulse having both lower power than an intermediate recording and the width of the cooling pulse being wider than each of them. This feature is not taught or implied anywhere in the prior art. The feature of claim 1 as now claimed is therefore neither anticipated nor obvious under the prior art.

Therefore, each of the present Claims 5 to 8 can be distinguished from Miyamoto in that it defines that the pulse width of a cooling pulse is set to be wider than those of the top pulse and the last pulse as well as that of the intermediate pulse while Miyamoto neither discloses nor suggests that the pulse width of a cooling pulse is set to be wider than those of the top pulse and the last pulse.

Moreover, it is clear from the present application description that as filed in "According to this preferred aspect of the present invention, since the pulse width of the cooling pulse of the laser beam is set to wider than that of any pulse of the recording power, the influence from heat caused when neighboring recording marks are formed can be much reduced" (page 6, lines 14 to 17 of the English text). The description also states "Thus, since the width of the cooling pulse is set to be wider than that of a pulse of the recording power, the influence of thermal interference between itself and neighboring recording marks can be reduced and high density recording and high data transfer rate can be achieved" (page 19, lines 24 to 27 of the

English text). It is important to set the pulse width of a cooling pulse to be wider than those of the top pulse and the last pulse.

Thus, since Miyamoto neither discloses nor suggests the most important features of the present Claims 5 to 8, we believe that it becomes possible to assert the patentability of claim 1 by incorporating the features defined in each of the present claims 5 to 8 into the present claim 1.

Further, since the influence of thermal interference between a recording mark and neighboring recording marks can be more effectively reduced as the pulse width of a cooling pulse is set wider, we think that it is also possible to assert that the features of the present claim 9 is patentable.

Applicants respectfully submit that claim 1 is allowable.

Claims 2-4, 11 are dependant from allowable claim 1. For at least this reason claims 2-4 are also allowable.

Claims 5-8 have been canceled.

Claims 9 and 10 has been amended to depend from claim 1. For at least this reason, claims 9 and 10 are allowable.

Claim 12 has also been amended to claim the patentable features of claim 1 and the same remarks apply. Claim 12 is therefore believed allowable.

Claims 13-15 depend from allowable claim 12. For at least this reason, claims 13-15 are allowable.

Claim 16 has also been amended to claim the patentable features of claim 1. Claim 16 is therefore believed allowable.

Claims 17-19 depend from allowable claim 16. For at least this reason, claims 13-15 are allowable.

New claims 20 and 21 contain additional features beyond those found in claim 1. They specify, in addition to having all the features of claim 1, that the cooling power level is set to the power level of the bottom most power level during the recording of a mark. This is yet an additional feature not found in the Miyamoto. The placing of the cooling power at the lowest power level, while at the same time having a variation of power levels in the recording power

between the first, intermediate and last pulses is a unique and unobvious pulse train recording method not shown in or obvious from Miyamoto.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,

SEED Intellectual Property Law Group PLLC

/David V. Carlson/

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DVC:lcs

Enclosure:
1 Sheet of Replacement Drawings (Figure 12)

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